

Tribal And NWIFC Wild Salmon Recovery Efforts: Federal Funds At Work



**A Report To Congress
From The Treaty Indian Tribes
In Western Washington
FY 2003**

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Cover: Makah tribal fisherman Bill Secor fishes for chinook and coho salmon on the Sooes River near Neah Bay. Photo: D. Preston

Foreword

This report outlines activities, accomplishments and additional funding needed for ongoing tribal efforts to recover wild salmon stocks with the aid of congressional appropriations for four initiatives: The Timber/Fish/Wildlife Forests and Fish Report; Hatchery Reform Project; Pacific Coastal Salmon Recovery Program; and Coordinated Tribal Water Quality Program.



Surplus coho salmon spawned at a Quinault Indian Nation hatchery are returned to streams where their nutrients enrich the entire ecosystem. *Photo: D. Preston*

For FY 2003, Congress appropriated a total of \$3.5 million for Hatchery Reform efforts in western Washington, with western Washington treaty Indian tribes receiving \$828,690 of that amount. A total of \$90 million was appropriated for the Pacific Coastal Salmon Recovery Program, of which western Washington treaty tribes received \$7.34 million. For statewide tribal participation in the TFW/FFR initiative, Congress appropriated \$3.068 million for tribal participation. For the Coordinated Tribal Water Quality Program, tribes in Washington received \$625,000.

Because the tribes are co-managers of the salmon resource with the State of Washington and the federal government, full tribal participation is required in virtually all phases of natural resource management. Since the life history of salmon includes both freshwater and saltwater phases – and because all natural resources are interconnected – the complexity of salmon management is compounded by many water and land-use decisions. Forest practices and water quality issues affecting wild salmon habitat, hatchery practices affecting the genetic integrity of wild salmon, and fisheries management actions affecting sustainable harvests are all key elements that must be addressed to achieve recovery.

For salmon to thrive, four biological needs must be met:

- An adequate supply of clean water;
- Properly functioning spawning and rearing habitat;
- Access to and from the sea; and
- A sufficient number of adult salmon returning to spawn.

Providing these basic requirements, however, is proving to be one of the most difficult environmental, economic, political and social challenges ever faced in the United States.

One thing is clear: the battle to save the salmon cannot be fought alone. Only through cooperation and a shared vision for salmon recovery by tribal, state, federal and local governments, industry, conservation organizations and the public will wild salmon populations be restored.

Today, all are participants in the Shared Salmon Strategy for Puget Sound salmon recovery effort now being implemented in the State of Washington. The Shared Strategy has been endorsed by the National Marine Fisheries Service to develop recovery plans for Puget Sound salmon stocks listed as “threatened” under the Endangered Species Act.

A chronic lack of funding has taught tribes to become highly effective at making each federal appropriation dollar work to its fullest. In a spirit of cooperative natural resource management that has prevailed in Washington since the 1980s, tribes effectively partner with governments, agencies, organizations and others to achieve the most efficient and effective use of limited federal funding. Tribes also integrate efforts inter-tribally, naturally grouping efforts in shared watersheds and marine areas. Tribes further coordinate their efforts through tribal organizations such as the Northwest Indian Fisheries Commission and Point No Point Treaty Council.



Wild salmon recovery in Washington simply will not occur without meaningful participation by the treaty tribes. No one else knows salmon like the tribes. No group has a higher stake in ensuring the species' survival than a people who depend on salmon for their spiritual, cultural and economic survival.

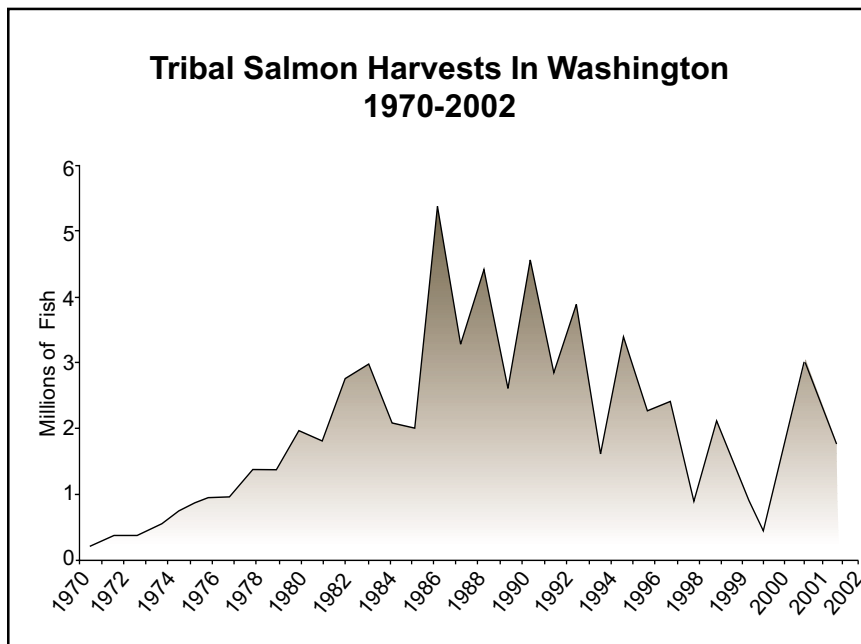
Introduction

Indian tribes have always lived on every major watershed in what is now the State of Washington, and have co-evolved with the natural resources of the region. From time immemorial, tribal cultures have centered on fishing, hunting and gathering the natural resources of this region.

In the mid-1850s, the United States government sought land in the Pacific Northwest for non-Indian settlers. In exchange for all of the land that is now western Washington, the government signed treaties with local tribes that guaranteed the tribal right to harvest salmon in all of their traditional places. That promise was broken in the decades that followed, until the federal district court in 1974 reaffirmed the tribal treaty right in *U.S. vs. Washington*. The ruling, upheld by the U.S. Supreme Court, established the tribes as co-managers of the resource entitled to half of the harvestable number of salmon passing through their traditional fishing areas.

Today, the wild salmon upon which the tribes have always depended are disappearing. Habitat destruction and degradation from more than a century of timber harvesting, dam construction, non-Indian over-harvesting of the salmon resource, over-dependence on salmon hatcheries to compensate for the loss of natural production and other factors have all contributed to the decline of wild salmon. Over the past 25 years a huge population influx around Puget Sound has accelerated the loss and degradation of what remains of the region's once highly productive salmon habitat.

In the spring of 1999, the National Marine Fisheries Service listed three western Washington salmon stocks – Puget Sound chinook, Hood Canal/Eastern Strait of Juan de Fuca summer chum, and Lake Ozette sockeye – as “threatened” under the Endangered Species Act. The ESA is a law of last resort to save distressed species from extinction, protecting not only listed



salmon but also their habitat. The listing was the first of a species that resides in a heavily urbanized area such as Puget Sound, and has placed massive new responsibilities on the treaty tribes as co-managers of the salmon resource.

While the ESA is neither the starting point nor the end point for salmon recovery, it is now the filter through which potentially harmful activities are evaluated as individuals, corporations, industries and governments seek to move forward on development plans in a manner consistent with the ESA and the needs of salmon.

Over the past two decades, in response to dwindling populations and reflecting a commitment to

sustainable fisheries, tribes and the state have worked together to reduce their harvest of salmon by up to 90 percent. Improved ocean conditions have contributed to larger returns in the past few years, however, continued loss and degradation of salmon spawning and rearing habitat continue to drive downward the overall trend for wild salmon populations.

More recently, many local governments have begun developing strategies to meet the needs of people and salmon at the watershed level, and several large landowners and industry sectors are stepping forward to pioneer better ways to achieve business objectives while protecting and restoring functioning ecosystems that support salmon.

A Shared Strategy For Salmon Recovery

In the fall of 1999, over 200 tribal, federal, state and local leaders met to discuss the salmon crisis. They identified common goals for wild salmon and worked to find ways to achieve those goals. Their vision is clear: healthy ecosystems to produce and support wild salmon at a level that will once again sustain commercial, ceremonial and subsistence harvest. Without a common approach to achieve that goal, though, recovery and protection of wild salmon and their habitats will not be achieved.

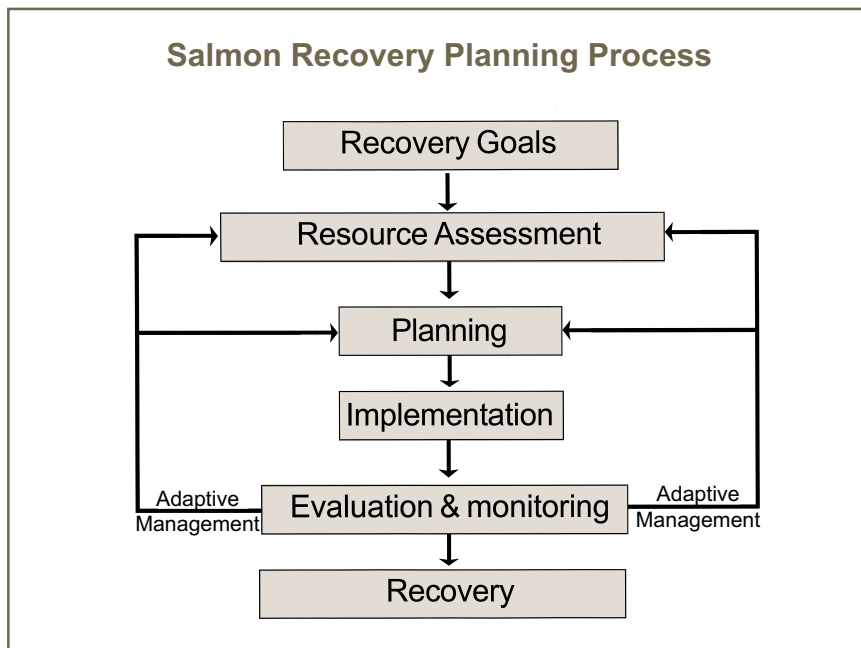
The Shared Salmon Strategy for Puget Sound reflects the following core elements necessary to protect and restore wild salmon and their habitats. They include:

- Sound science to guide and measure recovery efforts;
- Clear and common goals to unite local, regional and national commitments;
- Effective planning to develop integrated, efficient methods of achieving shared goals;
- Successful actions to protect and restore wild salmon populations;
- Accurate monitoring to ensure progress and accountability; and
- Sufficient funding to sustain protection and restoration efforts of the key participants.

The Shared Strategy has an ambitious timeline and is on track to deliver a draft recovery plan by June 2005.

The Shared Strategy is not a top-down approach to wild salmon recovery, but rather a cooperative effort that links ongoing wild salmon recovery initiatives at the tribal, state, federal and local levels to create a plan that is viable and cost-effective. It establishes, organizes and manages these links; identifies necessary long and short-term actions and coordinates funding needs; and proposes laws or policies needed to support wild salmon recovery.

Key to the Shared Strategy's potential for success is the endorsement and participation in the process by the National Oceanic and Atmospheric Administration Fisheries (NOAA), the federal agency responsible for implementing the ESA for listed salmon species.



The Shared Strategy has an ambitious timeline and is on track to deliver a draft recovery plan by June 2005. In the past four years, much has been accomplished. An outline of the recovery plan has been prepared, implementation guidelines for watersheds have been created, and planning ranges and targets have been provided to all watersheds with chinook populations.

To date, 13 of 14 watersheds have agreed to submit a local chapter to a regional recovery plan by June 2004; the remaining watershed is exploring how to organize its planning activities to participate. Watershed planners presented their preliminary views on what is required to achieve the planning ranges and targets in their watersheds at a benchmark meeting in November 2003. Planners also outlined their likely watershed goals and the progress they believe they can make toward recovery. In addition, key participants at the watershed, regional, state and federal levels have begun discussions about how to integrate harvest and hatchery management plans into the recovery plan.

Meanwhile, the many other ongoing efforts contributing to wild salmon recovery will continue. One example is the Hatchery Reform Project, a systematic, science-driven examination of how hatcheries can help recover and conserve naturally spawning salmon populations and support sustainable fisheries. Tribes and their state and federal co-managers develop and implement highly conservative fishing plans designed to protect weak wild salmon stocks, and continue efforts to preserve and restore important salmon spawning and rearing habitat.

The goal of the treaty Indian tribes in western Washington is to achieve salmon recovery for all depressed salmon stocks in all areas. Puget Sound tribes are focusing their regional salmon recovery efforts through the Shared Strategy because – with the endorsement and participation by NOAA – it provides the best chance to reach that goal. The Shared Strategy does not seek to control or re-invent ongoing efforts, but rather to nurture them through links to appropriate common goals and regional decisions. As a result, salmon recovery momentum fostered through these comprehensive, cooperative efforts will be expanded and propelled through the Shared Strategy.

Funding Coordination And Accountability

The Northwest Indian Fisheries Commission (NWIFC) serves as the coordinator for funding provided for the Timber/Fish/Wildlife (TFW) Forests and Fish Report; Hatchery Reform; Pacific Coastal Salmon Recovery; and Coordinated Tribal Water Quality initiatives. This is a critical role that can only be performed by the NWIFC as an arm of the tribes.

Tribal Natural Resource Management FY 2004 Needs Assessment

Ongoing Wild Salmon Recovery Programs And Current Overall Congressional Funding Levels	Source	FY2003 Level	FY 2004 Tribal/NWIFC Congressional Request Level/Need
Hatchery Reform (\$3.5 million)	DOI/FWS or BIA	\$828,690 to tribes/NWIFC	Base of \$1.009 million with \$6 million/year for hatchery retrofit
Coastal Salmon Recovery (\$90 million)	DOC/NMFS	\$7.34 million to tribes/NWIFC	Base of \$110 million with \$15 million to tribes
Forest & Fish Report (\$3.068 million)	DOI/BIA	\$3.068 million to tribes/NWIFC	Base of \$3.048 million
Wild Stock Restoration Initiative/SSHAP (\$400,000)	DOI/BIA	\$400,000 to NWIFC	Base of \$400,000 + \$500,000 new
Coordinated Tribal Water Quality \$625,000	EPA	\$325,000	\$3.1 million
Emerging Needs			
Water Resources Management (\$0)	DOI/USGS	\$0	\$3.72 million
Agricultural Practices (\$0)	DOA/FSA	\$0	\$1.87 million
Shoreline Rules (\$0)	DOC/NOS	\$0	\$120,000
NEPA Compliance (\$250,000)	DOI/BIA	\$250,000	\$250,000

The NWIFC was created in 1974 by tribes party to the *U.S. vs. Washington* litigation that re-affirmed tribal treaty-reserved rights and established the tribes as co-managers of the salmon resource with the State of Washington. Assisting member tribes in conducting biologically sound fisheries and providing a unified voice on fisheries management and conservation issues is the mission of the NWIFC. Member tribes are Nisqually, Squaxin Island, Puyallup, Jamestown S'Klallam, Port Gamble S'Klallam, Lower Elwha Klallam, Skokomish, Swinomish, Sauk-Suiattle, Upper Skagit, Tulalip, Makah, Stillaguamish, Muckleshoot, Suquamish, Nooksack, Lummi, Quinault, Quileute and Hoh.

The NWIFC employs about 70 full-time employees in its Administration, Fishery Services, Habitat Services and Information and Education Services divisions. Most commission staff provide direct services to member tribes – ranging from fish health to statistical analysis – bringing together professional experts in an economy of scale that enables tribes to efficiently utilize limited federal funding. Employing sound project management techniques, the NWIFC provides coordination and technical services that help tribes make the most efficient possible use of salmon restoration funding.

The NWIFC has a solid record of effective coordination and representation. Mature grant contracts which the commission administers annually for member tribes include the \$1.7 million western Washington Boldt

Case Area Funds, the \$1.6 million U.S./Canada Pacific Salmon Treaty Contract, and the \$109,000 Timber/Fish/Wildlife Contract, as well as a number of one- to three-year project-specific grants.

Conclusion

Restoring wild salmon populations to levels that can again sustain harvest by both Indian and non-Indian fishermen is the main goal of the treaty Indian tribes in western Washington. Wild salmon populations did not decline overnight, and their recovery will be neither quick nor easy. It will take cooperation, much hard work, adequate funding and time to return their numbers to abundance.



Pacific Coastal Salmon Recovery Program

Introduction

Congress created the Pacific Coastal Salmon Recovery Program (PCSRP) in 2000 to provide critically needed assistance to tribes as participants in growing salmon recovery efforts in the region. Recognizing the need for flexibility among tribes to respond to salmon recovery priorities in their watersheds, Congress earmarked the funds for salmon habitat restoration, salmon stock enhancement, salmon research, and implementation of the 1999 Pacific Salmon Treaty Agreement and related agreements. This report summarizes the important work these much-needed funds are supporting to restore healthy and wild salmon runs to western Washington.

Policy Development

Wild salmon have always been vital to sustaining tribal cultures and economies, a fact that is no less true today than it was in the 1850s when the tribes' treaties were negotiated with the United States. Because of the central role salmon play in the health of their communities, the tribes secured the continued right to harvest wild salmon in exchange for vast lands and resources now enjoyed by millions of non-Indians. While unequivocally affirmed by the U.S. Supreme Court, the United States' treaty promises ring increasingly hollow as wild salmon continue to disappear from the Pacific Northwest.

Past over-harvesting and over-dependence on hatcheries have contributed to the disappearance of wild salmon. Tribes have worked diligently over the past three decades to improve and reform harvest and hatchery management. These efforts have been successful in slowing the loss of wild salmon, but stocks have not – and cannot – rebound with these actions alone. Experts have concluded that loss and degradation of freshwater and estuarine spawning and rearing habitat in the tribes' ceded territory have been, and continue to be, the major causes of decline.

Habitat degradation began over a century ago, but over the past 30 years a huge population influx around the Puget Sound – with its accompanying development, pollution, and increased demand for water – has begun to decimate much of what remains of the region's once highly productive salmon habitat. Growth in the region is expected to continue, creating the urgent need to take meaningful steps to protect and restore ecosystems that support salmon and other life.

In 1999, Puget Sound chinook, Hood Canal/Strait of Juan de Fuca summer chum and Lake Ozette sockeye salmon were listed as “threatened” under the Endangered Species Act (ESA). Today, salmon restoration efforts in western Washington – indeed, all salmon management here – must be conducted with the ESA as its backdrop.

The ESA is the filter through which must pass all salmon recovery plans in western Washington. The ESA isn't the starting point for salmon restoration – the state and tribes have been working on restoration efforts for decades. Nor is ESA the end point. Tribal salmon restoration efforts won't conclude until there are healthy wild fish populations to support harvest by both Indian and non-Indian fishermen.

Western Washington tribes are leaders in the salmon recovery effort. The tribes possess the legal authority, technical and policy expertise, and effective programs to address impacts on wild salmon from harvest and hatcheries. Over the past three decades, in response to dwindling populations and a commitment to sustainable fisheries, the tribes and State of Washington have worked together as co-managers of the resource, modifying and reducing harvests to protect individual populations of salmon. Harvest levels have been cut dramatically – by as much as 80-90 percent in some cases – at great cost to the spiritual, cultural and economic well-being of the tribes. Harvest reductions alone, however, cannot make up for the loss of wild salmon production caused by lost and degraded spawning and rearing habitat.

Through hatchery reform efforts now under way, the treaty tribes and State of Washington are drawing upon state-of-the-art science to minimize the impacts of artificial propagation on wild salmon. For each of their chinook hatcheries, tribes have completed Hatchery Genetic Management Plans. These plans, along with those completed by the Washington Department of Fish and Wildlife for its chinook hatcheries, form the basis of a conservation plan that NOAA Fisheries will consider for Section 4(d) coverage under the Endangered Species Act. Section 4(d) prohibits taking a listed salmon or steelhead, except in cases where the take is associated with an approved program.

Tribal governments have made strides to protect salmon habitat, both on their reservations through land use and water resource authorities and off-reservation by collaborating with non-Indian neighbors to protect and restore watersheds that support salmon.

At the forefront of the struggle for salmon recovery in western Washington is the Shared Strategy. This four-year-old effort by tribal, federal, state and local governments and private sector leaders is aimed at creating healthy ecosystems to produce and support wild salmon at a level that will once again sustain commercial, ceremonial and subsistence harvest.

The Shared Strategy is not a top-down approach to wild salmon recovery, but rather a cooperative effort that links ongoing wild salmon recovery initiatives at the tribal, state, federal and local levels to create a plan that is viable and cost-effective. It establishes, organizes and manages these links; identifies necessary long and short-term actions and coordinates funding needs; and proposes laws or policies needed to support wild salmon recovery. Much has been accomplished. The Shared Strategy has an ambitious timeline and is on track to deliver a draft recovery plan by June 2005. Key to the Shared Strategy's potential for success is the endorsement and participation in the process by the National Marine Fisheries Service (NMFS), the federal agency responsible for implementing the ESA and for overseeing recovery efforts for listed species.

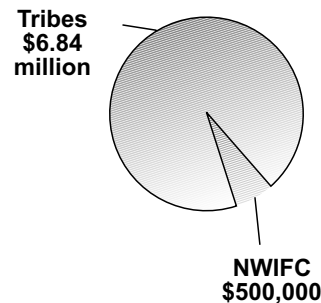
Despite these efforts, however, the tribes' salmon recovery strategies continue to be hamstrung by insufficient resources. With listings of the tribes' treaty-protected salmon under the Endangered Species Act, the region's recovery activities threaten to overwhelm tribal resources. The tribes' meaningful participation in these complex and resource-intensive efforts to protect and restore treaty-protected salmon resources is critical to their success.

Funding Distribution

In FY 2003, western Washington treaty Indian tribes received \$7.34 million in PCSRP funding for their continued participation in salmon recovery efforts. Each of the 20 tribes received \$342,500, with \$500,000 earmarked by the tribes for coordinating efforts by the NWIFC. As of this writing, Congress had not yet appropriated funding for FY 2004. The tribes are seeking at least status quo funding of \$9 million for this fiscal year.

Working closely with NMFS, the tribes have established efficient application and reporting requirements through the NWIFC to ensure accountability and the achievement of congressional and tribal salmon recovery goals.

Pacific Coastal Salmon Recovery FY 2003 Western Washington Tribal Appropriation: \$7.34 million



FY 2003 Allocation Of Pacific Coastal Salmon Recovery Program Funds

States	Washington \$28 million	Oregon \$14 million	Alaska \$22 million	California \$14 million
Sub-Total	\$78 million			
Tribes	Columbia River \$3 million	U.S. v. Wash. Case Area \$7.34 million		Other Pacific Coastal Tribes \$1.66 million
Sub Total:	\$12 million			
Total:	\$90 million			

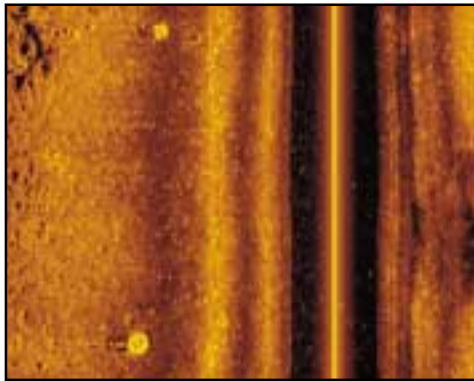
Implementation

Consistent with congressional intent, salmon recovery funding agreements allow the tribes flexibility in identifying for themselves salmon recovery priorities for tribal watersheds, governments and communities. At the same time, the tribes' efforts are connected through the NWIFC by overall strategies and efforts to most efficiently and effectively advance western Washington salmon recovery efforts. The NWIFC has re-directed resources and is using its base capabilities in a manner that advances these initiatives. Tribal proposals are reviewed and monitored by NWIFC technical and policy staff to ensure each provides sustainable and measurable benefits for salmon and their habitats. In addition, local and regional recovery efforts are analyzed and tracked to support the tribes' participation in shaping the direction of salmon recovery. It is on these two levels – the local level where watershed protections and improvements are being established to restore salmon runs and salmon habitat, and the regional level where state, federal and tribal leaders are collaborating to define goals and develop regional strategies – where salmon recovery is playing out in western Washington.

Accomplishments

Because each tribe has slightly different staffing patterns, due in part to differential funding, historic fishing practices and geography, each tribe is utilizing the funding in ways unique to its needs. Some tribes are using the monies to supplement ongoing salmon recovery efforts, while others are undertaking new projects to protect, preserve and enhance the salmon resource.

Following are several examples of some tribal salmon recovery projects being conducted with FY 2003 Pacific Coastal Salmon Recovery funds. Most tribal salmon recovery efforts are conducted in cooperation with state, local, federal or private sector entities to more effectively utilize limited tribal resources. All are part of comprehensive programs being conducted by the tribes to achieve wild salmon recovery.



A commercial crab pot (lower rounded image) and recreational crab pot (upper image) are displayed in this sonar image.
Photo: Natural Resources Consultants

Stillaguamish Tribe:

Sometimes called “ghost nets,” the abandoned fishing gear lurking in Northwest waters lives up to the nickname: derelict gillnets and crab pots are both hard to see and scary for scuba divers, boaters and fishermen. Floating freely, nets can trap and drown divers, foul propellers and otherwise threaten human safety. Most haunted by these discarded relics, though, are the area’s fish and crab. Modern technology has produced monofilament nets that don’t decompose, and can continue to trap fish, birds and other wildlife for years.

The Stillaguamish Tribe is working to remove those threats. A new effort by the tribe will identify and remove derelict nets and other gear in the Port Susan area. The project, which is funded with Coastal Salmon Recovery dollars, looks to remove the more dangerous gillnets first.

“My main concerns are the amount of wildlife killed in derelict nets and the risks this poses for people using Port Susan, like fishermen,” said Jen Seigny, a wildlife biologist coordinating the project for the Stillaguamish Tribe. “This is a serious issue for all wildlife, but especially for threatened bird species such as the marbled murrelet and threatened fish species like chinook salmon.”

“Derelict crab pots aren’t as big a threat to humans, but we’re interested in removing them to protect the ecosystem,” said Shawn Yanity, Stillaguamish tribal vice-chairman and fisheries manager. “As long as they’re in the water, they’re killing fish and crab. Removing them protects marine resources and improves habitat for salmon, including chinook.”

Protecting those resources becomes all the more important when species, such as the murrelet and chinook, are federally protected. Both species are listed as “threatened” under the Endangered Species Act.

The project uses advanced technology to catalog where the gear exists: high-resolution “side scan” sonar produces detailed images of the underwater environment, showing precisely where the ghost nets rest. “The data gathered from these efforts will be valuable in and of itself, in two ways,” said Pat Stevenson, environmental director with the Stillaguamish Tribe. “First of all, the sonar information will give us a clearer picture of the types of habitat in Port Susan. Also, any species killed by these nets represent mortality that fisheries planners aren’t able to plan for. Finding out what impacts derelict gear is having in Port Susan will only help our fisheries management efforts.”

Port Gamble S’Klallam Tribe:

Using a small net, Greg Sullivan scoops the remaining salmon from a smolt trap’s holding tank and counts his catch before releasing the juvenile fish back into the river. “That’s the last of them for today,” says the Port Gamble S’Klallam Tribe’s natural resources technician, who checks the trap on the Hamma Hamma River twice a week. “That makes 1,253 juvenile salmon. By far the most I’ve seen here at one time.”

That’s a good sign. The more fish that show up in the smolt trap’s tank, the more accurate of a count the tribe can get on how many juvenile salmon – or smolts – are migrating from the freshwater of the Hamma Hamma River into the saltwater of Hood Canal. The smolt trap is part of a Pacific Coastal Salmon Recovery-funded project conducted by the Port Gamble and Skokomish tribes, a local landowner, Long Live the Kings, the Hood Canal Salmon Enhancement Group and the Washington Department of Fish and Wildlife.

The smolt trap is a large, water-powered device that safely catches young salmon, allowing the fish to be studied and returned to the river unharmed. It’s anchored near the shore of the river just below the site where a tributary reaches the mainstem of the Hamma Hamma.

“The level of smolt production from the river is important because it reflects the quantity and quality of freshwater salmon habitat available in the watershed,” said Cindy Gray, Port Gamble S’Klallam finfish manager. “That information will help us forecast future adult salmon returns and determine what is best for this river in terms of harvest management, stock enhancement and habitat restoration. It’s not enough to just know how many salmon return to the river, we need to know how many are leaving, especially Hood Canal summer chum.”

Along with Puget Sound chinook salmon and Lake Ozette sockeye, Hood Canal summer chum are listed as “threatened” under the federal Endangered Species Act. The information collected about the summer chum salmon population on the Hamma Hamma River will go a long way toward helping the species rebound in the Puget Sound region. Declining chinook, pink and coho salmon, along with steelhead populations, also will be studied.

Puyallup Tribe:

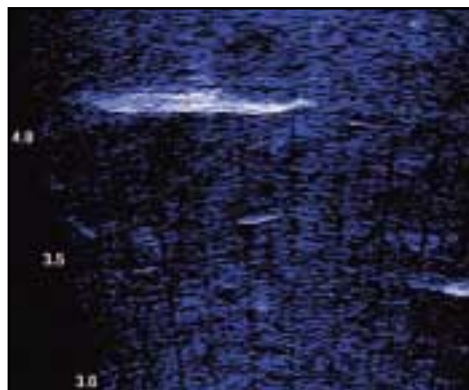
When salmon start returning in the fall, the Puyallup River is obscured by a chalky mix of glacial till, making it almost impossible for the adult spawning salmon to be seen. This poses a problem for salmon managers who would like to count every fish.

Starting this year, with the aid of Pacific Coastal Salmon Recovery funding, the Puyallup Tribe of Indians will use Dual Frequency Identification Sonar (DIDSON) – an advanced sonar system – to peer through the murk.

“If there is a larger population spawning in the glacial mainstem that we can’t see, that is something we really want to know,” said Russ Ladley, habitat biologist for the tribe. “It will also help us understand the salmon run’s timing a lot better.”



A natural resources technician for the Port Gamble S’Klallam Tribe counts juvenile salmon at a smolt trap on the Hamma Hamma River. *Photo: D. Friedel*



Highly accurate DIDSON sonar is being used to count salmon returning to the Puyallup River system. *Photo: University of Washington*

Images presented by the DIDSON system are black and white and are incredibly accurate compared to other types of sonar. “You don’t just see blobs or blips floating by, you actually see fish,” said Ladley. The images are so accurate that we will even be able to tell the difference between species.

“Tracking salmon populations over the years is some of the most basic and important work salmon managers can do,” said Ladley.



Quileute fisheries technicians survey the Sol Duc River for spawning steelhead.
Photo: D. Preston

Quileute Tribe:

On a sunny, 75-degree May day, Rueben Flores and his fellow fisheries technicians survey a stretch of the Sol Duc River for steelhead egg nests, or redds.

The surveys for steelhead began in March and continued through June, providing critical data for tribal and state fisheries managers, such as numbers of successfully spawning fish and the condition of their habitat. As waters recede in the early summer months, the surveyors walk stretches of river where it is too shallow to float.

The Quileute Tribe conducts similar surveys for coho and chinook salmon on the Sol Duc as well as coho, chinook and steelhead in the Bogachiel, Calawah and Dickey river drainages. Sockeye surveys are conducted in and around Lake Pleasant, and that means tribal crews are surveying for salmon redds from August through June. “The tribe and state do some helicopter surveys of redds, but the boat and walking surveys provide the ground truth of those observations,” said Roger Lien, fisheries biologist for the Quileute Tribe.

Future Funding Needs

The need for tribal resources is critically important as the region moves forward to develop a comprehensive salmon recovery plan through the Shared Strategy, a process that cannot succeed without meaningful tribal participation at all levels. In addition, tribes need resources to ensure recovery efforts in their watersheds are robust. Tribes are essential partners in salmon recovery, with needs that generally fall into three categories: infrastructure for policy and planning; regional integration and technical assistance; and restoration projects to protect and rebuild salmon habitat. Backed by solid systems of accountability and a strong strategic coordinating function provided by their NWIFC, the tribes ensure that salmon recovery resources directly benefit the salmon.

Pacific Coastal Salmon Recovery funding provided to western Washington tribes from FY 2000 to FY 2003 has enabled the tribes to begin realizing their appropriate role as central participants in wild salmon recovery efforts. Full participation in this long-term effort will be dependent on adequate future funding.

For FY 2004, the treaty tribes in western Washington are seeking at least \$9 million in Pacific Coastal Salmon Recovery Project funding to help further bridge huge unmet needs for building internal capacity. This funding will enable tribes to continue critical work on watershed assessments that include assessing habitat conditions, conducting in-stream flow studies, and analyzing water quality and quantity factors related to salmon productivity. Other types of salmon restoration projects and activities that could be conducted include projects to address factors limiting salmon production in watersheds, habitat and stock monitoring, and adaptive management monitoring, research, assessment and application.



Hatchery Reform Project

Introduction

As wild salmon stocks have declined, tribal, state and federal governments have become dependent on hatcheries to provide fish for restoration activities and a meaningful level of harvest for Indian and non-Indian fishermen.

The 1999 listing of several Puget Sound and coastal salmon stocks under the federal Endangered Species Act (ESA) has cast a spotlight on all activities that may harm wild salmon, including hatchery programs. In response, Congress adopted and funded in Fiscal Year 2000 the recommendations of a science advisory team, launching the Puget Sound and Coastal Washington Hatchery Reform Project. The Hatchery Reform Project is a systematic, science-driven examination of how hatcheries can help recover and conserve naturally spawning salmon populations and support sustainable fisheries.

Policy Development

Hatcheries play an important role in meeting tribal treaty harvest obligations. Federal court rulings have established the tribes as co-managers of the salmon resource with the State of Washington, and have affirmed that tribal treaty harvest rights include both hatchery and wild salmon.

As co-managers, the tribes and State of Washington are seeking to go beyond merely complying with ESA directives that hatcheries be operated to minimize risks to endangered fish. With the support of Congress and the State of Washington, considerable progress has been made in the short time that the Hatchery Reform Project has been under way.

The project has two purposes:

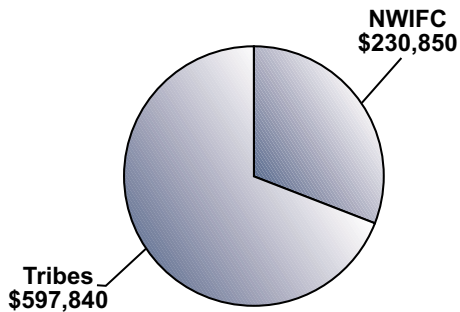
- Helping to recover and conserve naturally spawning populations; and
- Supporting sustainable fisheries.

There is a clear sense among decision makers that with an understanding of the history of hatcheries, a vision for how hatcheries can be managed differently in the future, and a comprehensive implementation plan that is based on solid science, there is good cause for optimism about the benefits of hatchery reform.

Federal appropriations have provided funding to:

- Establish an independent scientific panel – the Hatchery Scientific Review Group (HSRG) – to ensure a sound technical foundation for hatchery reform;
- Provide a competitive grant program for needed research on hatchery impacts;
- Support state and tribal efforts to implement new hatchery reforms; and
- Provide for the facilitation of a reform strategy by an independent third party, the Long Live the Kings salmon conservation organization, to coordinate implementation of the reform effort.

**Tribal Hatchery Reform
FY 2003 Appropriation: \$828,690**



Funding Distribution

The majority of the Hatchery Reform funds received by member tribes and their Northwest Indian Fisheries Commission (NWIFC) since FY 2000 have been used to implement 52 projects at tribal facilities that cost a total of \$2,345,908. Tribes developed a scientifically based competitive project application and ranking process for awarding contracts to individual tribes to implement hatchery reform activities.

The remainder of the funds have been used to support the tribal hatchery science team within the Enhancement Services Division at the NWIFC, as well as the tribal representative to the Hatchery Scientific Review Group,

housed at the Nisqually Tribe. The NWIFC hatchery science team consists of a supervising senior geneticist, a second geneticist, a biometrician and a salmon ecologist.

The geneticists provide technical support for commission and tribal staff on issues involving genetics and salmon recovery. These issues include: appropriate uses of hatcheries in salmon recovery programs; planning, implementation and monitoring of hatchery research; risk assessment; and mixed stock fishery analysis using genetic data.

The salmon ecologist provides technical support for tribal programs on issues involving ecology and artificial production. These issues include: the role of fish behavior, interspecies interactions and freshwater and nearshore habitats in designing hatchery programs; planning, implementation and monitoring of research for hatchery activities; and risk assessment of hatchery programs.

The biometrician provides technical support for commission and tribal enhancement staff on experimental design and monitoring, statistical analysis and database maintenance.

FY 2003 Hatchery Reform Appropriation

	WDFW	NOOAF	NWIFC	USFWS	HSRG	LLTK	IAC	Total
Independent Scientific Review, Oversight and Planning					\$302,000			\$302,000
Agency Scientists and Assistants to Support Scientific Decision Process	\$343,000	\$100,000	\$230,850	\$100,000				\$773,850
Hatchery Practices, Structural Improvements	\$938,790		\$597,840	\$60,750				\$1,597,380
Research Grants					\$390,000			\$390,000
Facilitation and Communication						\$340,000		\$340,000
Budget Administration				\$25,000			\$71,770	\$96,770
Total	\$1,281,790	\$100,000	\$828,690	\$185,750	\$692,000	\$340,000	\$71,770	\$3,500,000

WDFW = Washington Dept. of Fish and Wildlife;
 NOOAF = National Oceanic and Atmospheric Administration Fisheries Marine Fisheries Service;
 NWIFC = Northwest Indian Fisheries Commission; USFWS = U.S. Fish and Wildlife Service;
 HSRG = Hatchery Scientific Review Group; LLTK = Long Live the Kings;

Accomplishments

Funding for Hatchery Reform in western Washington has led to a series of important accomplishments:

- The state and tribal co-managers have created the Hatchery Reform Coordinating Committee, a top-level policy group committed to working with independent scientists to identify the goals of Hatchery Reform and encourage their implementation.
- The Hatchery Scientific Review Group (HSRG) – a diverse and accomplished scientific panel established to develop the scientific framework to guide Hatchery Reform programs – will, by the end of 2003, complete reviews of hatchery programs throughout western Washington.
- Hatchery and Genetic Management Plans (HGMPs) – the foundation of Hatchery Reform — have been completed. The plans contain descriptions of hatchery programs developed under a regional planning efforts by the co-managers.
- Initial research has been funded – and is being carried out – to address the knowledge gaps about how hatcheries affect wild stocks. The HSRG has funded three rounds of research – totaling over \$1.5 million – on hatchery impacts and the use of hatcheries as tools of conservation. The HSRG sponsors annual research reviews in January to provide an opportunity for funded researchers to present the results of their work, allowing the new scientific information to aid the Hatchery Reform effort.
- Congressional funding to support tribal and state efforts to implement Hatchery Reform has been used to establish science teams that have undertaken a variety of activities including: conducting risk analysis on hatchery programs to meet ESA requirements; conducting research on hatchery effects and practices that complement the HSRG research grant program; assisting in implementing early reforms; gathering data for HSRG regional briefing documents; interpreting technical literature for hatchery managers; and providing technical support to the HSRG the Hatchery Reform Coordinating Committee and regional staff participating in the hatchery program review process.

FY 2003 tribal science team work activities:

- The NWIFC staff geneticists assigned to Hatchery Reform worked on genetic issues associated with the development of hatchery management and reform plans and prepared for reviews with the Hatchery Scientific Review Group; helped collect and analyze DNA data on threatened Lake Ozette sockeye salmon for the Makah tribal monitoring program; and developed research to evaluate genetic change in small populations when the populations are being maintained by conservation hatchery programs.
- The NWIFC staff biometrician assigned to Hatchery Reform worked with the tribes to develop statistical techniques for assessing the contribution of hatchery and wild fish to natural spawning aggregations; analyzed data on returns of hatchery fish, which is useful for evaluating the success of hatchery programs; and provided statistical consulting on tribal research and monitoring projects. The biometrician has assisted the HSRG in developing monitoring and evaluation criteria that can be used to determine the success of a hatchery program in meeting its goals and objectives. These criteria will also consider what data is needed for future research on hatcheries. The biometrician also has begun work with participants in regions already reviewed by the HSRG to aid them in tailoring monitoring and evaluation criteria to the features and circumstances of their region.

The NWIFC salmon ecologist helped tribes implement sampling techniques for studying predation by hatchery fish; initiated a literature database on ecological interactions; and is developing qualitative modeling techniques to allow managers to describe potential ecological interactions in their watersheds and assess priorities for research and monitoring. The ecologist also worked with individual tribes to assist in development and implementation of ecological studies funded through the Hatchery Reform effort.

New hatchery management software and a database have been developed and distributed to greatly improve the amount of information available to hatchery managers and policy makers. The software, called HatPro, improves monitoring, management and planning capabilities for hatchery managers, as well as allowing on-site electronic transfer of key hatchery data directly to state, tribal and federal agencies. Three training workshops have been held for tribal hatchery managers.

In addition, several of the program-specific recommendations from the regional reviews have already been implemented. Examples include:

- Revision of hatchery programs for chinook and coho returning to Tulalip Bay to reduce genetic risks and further assess stray rates; and
- Discontinuation of the Tulalip Bay hatchery spring chinook program.

In addition, many tribes are studying what happens to their hatchery smolts once they leave the hatchery, through measures including conducting smolt trapping, estuary sampling, and comparisons of adult returns from different rearing strategies. Many are investigating juvenile and adult ecological and genetic interactions with wild stocks.

Tribal Hatchery Reform Projects

Following are examples of tribal projects being conducted with the aid of federal Hatchery Reform funding.



Bill Fryberg examines young chinook salmon at the Tulalip Tribes' salmon hatchery. *Photo: J. Shaw*

Tulalip Tribes:

Resting inside the ears of salmon are otoliths, tiny bone-like stones that can reveal key information about the fish. Like tree rings, the growth of the otoliths rings changes based on certain life history events – such as a change in water temperature.

By alternating the temperature of water flowing over salmon eggs and hatched fry, fish-producing facilities can conduct “thermal marking” of otoliths to identify the fish’s hatchery or stock of origin. The Tulalip Tribes’ Bernie Kai Kai Gobin Salmon Hatchery uses otolith marking technology to quickly and efficiently mass-mark all of the chinook salmon produced there.

“Marking hatchery fish and monitoring them after release is critical to management,” said Steve Young, manager of the hatchery. “Thermal marking allows us to mark all of the chinook salmon that we produce, without the added risk associated with handling the eggs or fish.”

Since 1993, the Tulalips have been marking fish in this manner. Currently, the tribe is in the process of changing its source of chinook salmon broodstock, and by applying unique otolith marks for each stock, Tulalip fisheries biologists can evaluate the contribution of each stock to fisheries and escapement totals. Now, with two Hatchery Reform grants, the tribes have upgraded equipment and enhanced their monitoring program, improving their ability to manage the salmon resource.

Otolith data is used to provide highly accurate “escapement” estimates of hatchery and wild fish, which fisheries managers use to set appropriate harvest levels. “Escapement” is the number of fish allowed to spawn so that a salmon run is maintained at a desired level. Developing escapement estimates correctly requires the best, most accurate information, which thermal marking provides. The Tulalips conduct otolith sampling of the tribal chinook fishery in Tulalip Bay, in which fish are sampled from the catch and their otoliths examined. In addition, the tribes also take samples from chinook returning to the tribal hatchery and from chinook carcasses on natural spawning grounds in the Snohomish basin and examine the otoliths for their unique marking patterns. This generates valuable knowledge that can be applied to management.

“Knowing where fish come from, and in what quantities, is essential for adaptive management,” said Young. “Adaptive management is a process of constant evaluation, where we consistently gauge the effectiveness of our efforts and assess where changes are needed.”

Thermal marking requires “chiller” units to decrease water temperature 2 to 4 degrees Celsius below natural levels found in the hatchery’s water source. Using a Hatchery Reform grant, the Tulalip hatchery acquired 12 new units to replace older models. The new chillers, made of stainless steel, are more powerful and resist rust more effectively than the ones they replaced.

Besides allowing easy tracking of all of the chinook salmon produced at the Bernie Kai Kai Gobin Hatchery, thermal marking is less invasive and thus less harmful to the fish than other methods.

“It’s more natural than other marking methods, like clipping the adipose fin near the tail or inserting coded wire tags into heads of fish,” said Mike Crewson, fishery enhancement biologist with the Tulalip Tribes. “With thermal marking, you don’t have to handle the fish and stress them out.”

Plus, thermal marking is more cost-effective. The only cost outlay after paying for equipment is time invested by hatchery technicians to set the marking process in motion.

Suquamish Tribe:

At the Suquamish Tribe’s Gorst Creek Hatchery, some salmon are made in the shade. Plastic lattice floating on the surface of the water in one of the hatchery’s two rearing ponds provides that important shade. The lattice – much like the kind sometimes used as a small fence – shields half of the 2 million chinook salmon that are reared at the hatchery.

“It’s the most elementary of structures, but the shade provides a much more natural environment,” said Paul Dorn, salmon recovery program manager for the Suquamish Tribe. “Our hope is that the fish being raised in the shaded ponds – or semi-natural ponds – will be able to survive in the wild at a higher rate than the fish reared in the traditional concrete ponds without any cover.”



Lattice floating on a rearing pond at the Gorst Creek Hatchery helps provide a more natural environment for young salmon. *Photo: Suquamish Tribe*

Salmon being reared in the semi-natural ponds tend to behave differently than salmon raised in traditional ponds. Salmon are attracted to shade, and in the traditional ponds the only shade often comes from the shadow of a worker who is feeding the fish. As a result, those fish associate a shadow with food. After being released, juvenile fish reared in traditional ponds can become easy prey because they might be attracted to the shadow of a predator searching for salmon along a stream. Salmon in the semi-natural pond, however, use the shade provided by the lattice for protection and cover, much like wild fish do in nature.

Salmon in the shaded ponds also are darker in color than the fish reared in the traditional ponds, where salmon tend to be brown. Because salmon have the ability to change color to resemble their surrounding environment, shaded ponds produce blacker fish. Predators will have a tougher time finding the dark salmon, increasing the survival rate of juvenile fish.

“The shade reduces the stress on the fish,” said Mike Huff, salmon enhancement program manager for the Suquamish Tribe. “Fish being reared in the traditional ponds are much more nervous, and we have found that the decrease in stress helps the fish grow quicker. Will that increase survival in the wild? We will find out after we release these fish and they return in a few years.”

Each salmon released from the Gorst hatchery has the adipose fin on its back removed to mark it as hatchery-produced salmon. About 100,000 fish in each pond also are equipped with coded-wire tags in their noses. When the fish are harvested as adults, biologists can tell when they were released, where they were reared and whether they were raised in a semi-natural or traditional pond.

After three to five years in the open ocean, the fish will return as adults to the Puget Sound area, where a number of them will be harvested in tribal, sport and commercial fisheries. Salmon caught in those fisheries are sampled to determine when and where particular stocks of fish are being harvested.

The tribe is conducting the project in cooperation with the Kitsap Poggie Club and the Washington Department of Fish and Wildlife, which owns the Gorst Creek Hatchery.

“We are trying to provide a more natural and healthy environment for the fish,” Huff said. “All of these fish are healthy, but with improvements such as shade I think we can produce even healthier salmon better suited for life in the wild.”



Young salmon are released into a natural rearing pond in the Queets Basin operated by the Quinault Indian Nation.
Photo: D. Preston

Quinault Indian Nation:

The Quinault Indian Nation (QIN) has been using a more natural approach to raising wild Queets coho for 10 years. The tribe knows that using natural rearing ponds has increased adult survival. But now the tribe wants to know how to further increase that survival rate by fine-tuning pond management.

The QIN supplements the weak wild coho stock by capturing adults returning to the Queets basin and holding them until they are ready to spawn. The eggs are fertilized and incubated in a nearby facility. When they reach pre-smolt phase, the life stage where they undergo the physiological changes needed to live in salt water, the fish are transported and released into six different natural and semi-natural ponds in the Queets basin. They are weaned from their hatchery diet and begin feeding on natural food sources such as insects. The fish are then allowed to migrate downstream at their own pace.

Fish released from natural rearing ponds survive to adulthood at significantly higher rates than those reared in hatcheries. They also develop more natural behavior and darker coloration than fish raised in concrete rearing ponds in hatcheries, enabling them to better avoid predators.

Fish leaving the ponds are marked and survival rates can be compared. Water temperature, water clarity, and observed predation are among the factors being considered to compare survival rates. The release groups from the ponds have been 100 percent marked and tagged with a millimeter-long coded wire tag inserted in the fish's nose that enables returning adults to be identified.

"If we find differences between ponds, then we can re-evaluate sites that are producing fewer fish while taking advantage of sites that are producing more fish," said Rob Rhoads, QIN fisheries technical support manager.

Because salmon are managed on the needs of the weakest stocks, the depressed Queets wild coho stock is key in management of coho throughout Washington. The stock limits coastal fisheries more than any other coastal run because the return of those fish overlaps with other, more abundant salmon species. As a result, it limits tribal fishing opportunity in the Queets River.

"We know these natural ponds condition the fish to survive better in the wild after their release. This study will help us fine-tune our approach to further improve survival," said Rhoads.

Nisqually Tribe:

On their third try of the day, researchers from the Nisqually Indian Tribe saw what they were looking for. As the center pocket of their seine net came closer to shore, several small silver flashes were apparent inside the mesh. "We have salmon," said Sayre Hodgson, tribal habitat biologist, as she plucked juvenile salmon from the net to be measured and weighed.

With the aid of Hatchery Reform funding, the Nisqually Indian Tribe is studying juvenile salmon in the Nisqually River estuary to determine how hatchery and wild fish interact in the dynamic estuarine environment. "The population of young salmon leaving the river is a mystery," said Hodgson. "The only way to fill in that knowledge gap is to get out there and count them."

Whether wild and hatchery salmon use the same habitat is important because fisheries managers don't want to unintentionally harm wild stocks by releasing hatchery fish that might out-compete them for the same resources. Nisqually River wild chinook are part of the Puget Sound chinook stock listed as "threatened" under the federal Endangered Species Act. In addition to chinook, the study is also looking at coho, chum and pink salmon and steelhead and cutthroat trout. Tribal researchers will also be studying residence time of various stocks in the estuary and what the fish eat.

Besides the impacts of hatchery fish, the study is also gathering data on the Nisqually River estuary following a major restoration project last year. The tribe removed dikes along a 30-acre portion of the estuary, allowing the tide to recreate lost habitat. "It will be interesting to see how the salmon have reacted to the removal of the dikes," said Hodgson.



Nisqually Tribe and NWIFC biologists haul in a beach seine on Red Salmon Slough in the Nisqually River estuary.
Photo: E. O'Connell

Using seines and fyke nets, tribal crews will be collecting juvenile fish from late winter until late summer. Fyke nets are large hoop nets that act as funnels to trap swimming fish. The nets will be set at the mouths of slough channels at high tide and will be checked near low tide, allowing the researchers to see how the tide affects juvenile salmon usage in estuarine channels. “Tidal channels in estuaries are incredibly productive areas,” said Hodgson.

“Restoring habitat and finding out how salmon interact with that habitat is vital to our restoration efforts on the Nisqually River,” said Georgianna Kautz, tribal fisheries manager. “To restore wild salmon to the Nisqually River, we need to dedicate ourselves to restoring as much of their habitat as we can.”

Farther up the Nisqually River system, a recycled fish ladder is aiding chinook salmon returning to the Nisqually Tribe’s Kalama Creek Hatchery.

“We had a problem getting returning chinook into the hatchery, because they were limited to entering through a pipe that wasn’t always effective,” said Bill St. Jean, chief enhancement biologist for the Nisqually Tribe. “This new fish ladder will allow a lot more fish to make it into the hatchery.”

The fish ladder, purchased with Hatchery Reform funding, was originally used on a creek in eastern Washington and only needed minor adjusting before being fitted in its new home. “Fish could make it up the pipe into the pond, but not enough to make it effective,” said St. Jean. “The water was just too fast and shallow for them,” he said.

Baffles in the ladder slow the water’s flow, providing easier passage for salmon into the hatchery. To further aid passage, tribal staff created a pool at the foot of the ladder, giving the salmon a place to stage before entering the structure. “This entire project is about making it easier on chinook,” said St. Jean. “They have already gone through an incredible journey just to make it to Kalama Creek. We don’t need to make it any harder on them to get into the hatchery.”

Future Funding Needs

Unlike the State of Washington, which provides legislative appropriations to the Washington Department of Fish and Wildlife to implement Hatchery Reform, federal appropriations are the only avenue available to the tribes for hatchery management and reform funding. Hatchery Reform is an ongoing process, and consistent federal funding is absolutely necessary to enable tribes to conduct hatchery-specific studies that provide information leading to progressive modifications of hatchery programs and facilities.

Tribes are continually refocusing their programs to address the most pressing salmon related issues. Significant portions of tribal programs and resources have been refocused to address salmon recovery issues such as ESA and Hatchery Reform.

The member tribes of the NWIFC continue to contribute to the technical expertise regarding changes needed in hatchery programs. They have jointly completed resource management plans for Puget Sound hatcheries. They will also continue to contribute technical expertise in genetics and hatchery management and, to the degree feasible, utilize extremely limited hatchery maintenance funds provided through the Bureau of Indian Affairs to assist in implementation of Hatchery Reform.

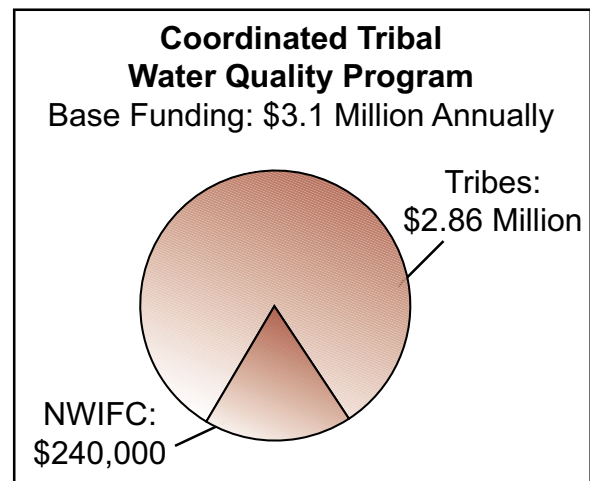
Congress has reduced overall funding for Hatchery Reform by \$500,000 from \$3.5 million to \$3 million for FY 04. That funding has not yet been allocated to participants, but will likely result in reduced tribal implementation.

Coordinated Tribal Water Quality Program

Introduction

The Coordinated Tribal Water Quality Program (CTWQP) was developed by the 27 federally recognized tribes in the State of Washington in 1990. For the past 13 years tribes have worked with the U.S. Environmental Protection Agency (EPA) to implement the CTWQP. EPA funds are enabling the tribes to conduct water quality programs critical to the management of their treaty-protected resources, and to provide for the health of their members and the environment.

The base level funding requirement for the Coordinated Tribal Water Quality Program is \$3.1 million per year. This provides \$110,000 to each of the 27 tribes for their individual programs and \$240,000 for statewide program coordination. This funding structure provides for extremely low overhead with 94.5 percent of the funds going to on-the-ground activities and just 5.5 percent to coordination.



Funding for this program for the past five years has come from Senate appropriations aimed at Northwest tribes to supplement the EPA Indian General Assistance Program (IGAP). Without these funds, the CTWQP would no longer exist because base level funding described above has not been provided for nearly a decade.

The past year's funding, while less in amount than in years past, provided important overall water quality program support to tribes. These CTWQP monies have evolved into providing much needed direct implementation monies that, coupled with IGAP funding, create a net result larger than the sum of their parts. Profiles of individual tribal programs below illustrate the utility and enabling nature of these monies.

The CTWQP is designed to further the ability of tribes to organize and begin addressing the water quality concerns that are threatening their reservations and treaty-protected resources. Water pollution in Washington threatens the health of tribal members and their treaty resources without respect to political boundaries. Tribal jurisdictions interlock with many other jurisdictions, including some of the most densely populated and industrial areas in the state.

Three commonalities guide program design and implementation:

- All tribes are confronted by serious water quality issues;
- All tribes require necessary infrastructure to adequately address these issues; and
- A watershed/ecosystem approach is the best approach to solving these issues because of their multi-jurisdictional nature.

The tribes in Washington developed and adopted the CTWQP as a watershed protection strategy to safeguard the resources on which they depend for their economic, spiritual and cultural

survival. This strategy provides for the development of infrastructure, program implementation and statewide coordination.

At a time when EPA is working to improve responsiveness to Indian governments and Indian lands, the Coordinated Tribal Water Quality Program provides a national model. The program demonstrates how tribes and EPA can improve the structure of their relationships, thereby improving the success of ecosystem management approaches. Additionally, this model program has produced transferable tools that can be shared with tribes throughout the nation.

These tools include:

- Routine coordination and networking among tribes, state agencies and EPA;
- A coordinated tribal water quality database design and structure;
- A tribal water quality standards template;
- A Coordinated Tribal Water Quality Program design manual; and
- A cooperative state/tribal 303(d) strategy.

The tribes know that the battle against water pollution cannot be fought alone. To succeed, it will require cooperative, coordinated efforts with other governments. To make every funding dollar work to its fullest, the tribes are building partnerships with other governments to implement coordinated, cooperative programs that address water quality issues.

For more than two decades, the tribes in Washington have been successfully developing comprehensive, cooperative agreements with state and local governments and private interest groups to protect and manage natural resources essential to the survival of fish and shellfish. These processes, unique in the nation, have brought previously contending parties together in efforts to address difficult issues.

The tribes are committed to managing water quality on a watershed/ecosystem basis that transcends political boundaries. To that end the tribes have developed the CTWQP, which benefits not only the tribes, but all residents of the state.

The federally recognized tribes in Washington are confronted by serious water pollution issues, but lack the means to adequately address these issues. The main sources of pollution degrading tribal waters are:

- Urbanization;
- Agricultural practices;
- Logging and other silvicultural activities;
- Failing septic systems;
- Storm water runoff and sewer overflows;
- Municipal and industrial discharge;
- Industrial point source pollution;
- Municipal and industrial water diversions; and
- Mining.

Many of these pollution sources originate some distance from tribal reservations, yet still threaten tribal health and well being. These types of pollution threaten the survival of salmon, shellfish and other natural resources on which the tribes depend for their survival.

Nearly all tribes operate fish hatcheries and other facilities to supplement stocks of wild salmon. These facilities, which depend on clean water for their operation, produce an average of 40 million young salmon annually.

Participating tribes want the CTWQP coordinating mechanism and technical components to build on the existing efforts of individual tribes and other entities to improve water quality, restore salmon populations and protect shellfish. The CTWQP is neither intended to replace existing tribal programs nor compete with them for funding.

The Program

For 13 years, 27 federally recognized Indian tribes in the State of Washington have been implementing the Coordinated Tribal Water Quality Program. Much has been accomplished in that time. As previously described, the CTWQP has two components: individual tribal programs and coordination.

Individual Tribal Programs

Each of the 27 tribes has professional staff to accomplish program activities. Work in FY 03 continues successful program implementation of this longstanding initiative.

Utilizing the CTWQP, tribes proceeded to develop and implement watershed management plans, monitor water quality trends, map problem areas, clean up shellfish beds, establish well head protection programs, and develop water quality standards.

As sovereign governments and partners in water quality management, the tribes also began participating in cooperative watershed-based, inter-governmental water quality protection activities.

Coordination

The Northwest Indian Fisheries Commission, functioning as the coordination entity for the CTWQP, organizes and facilitates bi-monthly program meetings, provides a forum for program policy development, serves as an information clearinghouse, represents tribal interests on statewide policy and technical committees, arranges meetings of tribal, state and federal participants to address water quality issues, facilitates implementation of tribal water quality programs, and works to maintain program funding. The intent is to support tribal programs while maintaining a coordinated program focus, allowing tribes to concentrate on their local water quality concerns.

Accomplishments

The continuing success of this tribal water quality protection strategy is encapsulated in the following list of program accomplishments. This is not intended to be a comprehensive list, but a representation of program achievements and the widespread environmental benefits that can be attributed to the program. The success of water quality protection and restoration in Washington requires the tribes to be full and consistent partners.

Tribal Program Accomplishments



Makah fisheries technician Gwen Swan gathers a sample of blue mussels to be tested for naturally occurring toxins on a beach in Neah Bay. *Photo: D. Preston*

Makah Tribe:

Gwen Swan knows the link between water quality and the dinner table better than most.

The Makah tribal member eats seafood nearly every day. She is also a fisheries technician whose duties include harvesting mussels and clams in and around Neah Bay to be tested for biotoxins such as Paralytic Shellfish Poison (PSP) and Amnesic Shellfish Poisoning (ASP).

PSP and ASP are both naturally occurring toxins. PSP can kill a person in as little as two hours by paralyzing the chest muscles used for breathing. ASP can cause vomiting and diarrhea within 24 hours and neurological damage such as memory loss, confusion and disorientation in the longer term. The testing of the mussels and clams is a key part of the tribe's water quality program.

"I remember when I was a girl that we ate everything we're seeing on this rock today," said Swan as she gathered mussels for PSP testing. Pointing to green sea anemones, Swan remembered that tribal members would remove the leathery boot before boiling the flower-like animals to eat.

"To protect these resources, it is critical that the tribe have the capacity to monitor and regulate the quality of marine waters regularly flowing within intertidal areas and streams that drain into the marine areas," said David Lawes, water quality resource specialist for the Makah Tribe. As part of ensuring the health of the Makah people, the tribe has established water quality standards that are currently being reviewed by the federal Environmental Protection Agency.

The tribe surveys more than 50 sites as part of its water quality monitoring plan. Using funds from the Coordinated Tribal Water Quality Program, the tribe purchased a new monitoring tool that tracks turbidity, temperature, salinity, dissolved oxygen and pH levels. Technicians track these stream health indicators as well as fecal coliform (human and animal waste). Knowing fecal coliform levels, for instance, alerts the tribe to the possibility of shellfish contamination. Additional CTWQP funds were used throughout the monitoring program.

"The biological testing of shellfish is one of the most important aspects of our water quality program," said Lawes.

Developing a baseline of water quality data enables the tribe to better assess impacts of various activities such as logging on the watersheds as needed. Aquatic life is the most sensitive water quality indicator. The tribe's monitoring provides an early warning system if water quality becomes degraded.

"When you have a population that relies so heavily on the life in the sea, lakes and rivers for subsistence, it's really important that you know the health of the whole system," said Lawes.

Jamestown S’Klallam Tribe:

Dungeness Bay has a pollution problem and the Jamestown S’Klallam Tribe is working to clean it up. The tribe has always depended on the bay for shellfish. Not only does the tribe harvest clams and oysters along the beach for ceremonial and subsistence purposes, the tribe also operates a commercial shellfish farm in the bay.

In recent years, however, portions of the bay have been closed to recreational and commercial shellfish harvesting because of high levels of fecal coliform. The bacterium, which comes from the feces of warm-blooded animals such as livestock, wildlife and humans, flushes into the bay. Because oysters and clams filter food from water, fecal coliform sometimes ends up in the tissue of shellfish, making people sick if eaten. Over time, however, shellfish will flush the pollutants from their system.

“The pollution problem is tough for the tribe as well as other residents in the area,” said Lyn Muench, natural resources planner for the Jamestown S’Klallam Tribe. “We’ve had to work with different groups and try different things to identify the problems and get the word out about what can be done. The pollution in the bay is ‘non-point,’ meaning that it comes from numerous scattered small sources. We have this big problem of a polluted bay and the first weapon against it is information.”

Since 1997 – when water samples began showing signs of pollution – the tribe has taken part in a coordinated effort to clean up the water in and around Dungeness Bay. With the help of Coordinated Tribal Water Quality funding, the tribe has helped monitor water quality in the bay, as well as the Dungeness River and its tributaries and conducted two water circulation studies that identified where pollution was coming from and how it flowed throughout the bay each day.

The tribe, along with Clallam County, the Clallam Conservation District, the Department of Ecology, and other state agencies, also has worked to educate the public about the pollution problem by hosting workshops and seminars for residents living in or near the Dungeness watershed.

Failing septic systems, poorly managed farms large and small, wildlife and storm water runoff all contribute to rising pollution levels in the bay. Because there are numerous sources of pollution located throughout the watershed, fixing the problem isn’t easy. And as the Dungeness valley’s population continues to grow – having tripled in the last 25 years – the pollution problem could grow with it.

Some progress, however, has been made. The Clallam Conservation District has helped some local farmers by sharing the cost to put up fences to keep livestock away from the river and its tributaries. The tribe has passed through some of its water quality funds from federal sources to the Conservation District and the county to extend this cost-share concept to such projects as manure composting, and inspection and repair of septic systems. The tribe also has sponsored a series of workshops at the Dungeness River Audubon Center, which it manages in partnership with several non-profit organizations.



A window shade drogue is released into Dungeness Bay to gather information on water circulation. *Photo: E. O’Connell*

“It’s a creative use of our water quality funding to try and get at resolving this complicated problem in the valley,” Muench said. “Working with these other organizations helps address the problem and get the word out about what people can do to help. Harvesting clams and oysters in Dungeness Bay is important to the tribe. We will continue to work hard to solve this problem, because we want to ensure that the entire community can gather shellfish in this bay and not have to worry about pollution. But there is still a lot of work that needs to be done.”



Plastic tubes protect young trees planted along Skookum Creek by the Squaxin Island Tribe. *Photo: T. Henderson, Squaxin Island Tribe*

Squaxin Island Tribe:

Last spring the Squaxin Island Tribe, with the aid of Coordinated Tribal Water Quality Program funding, planted over 2,000 conifers along Skookum Creek. “Eventually these trees will grow tall, shading and cooling the creek,” said John Konovsky, water quality biologist for the tribe. “Many of the trees will also fall into the creek, creating logjams that will slow the water and create habitat for salmon.”

In addition to planting trees, the tribe also provided legal muscle to ensure their work will last. Skookum Creek is protected by a larger buffer – more than 300 feet – than most streams its size. “The area around the creek is some of the tribe’s most valuable commercial land,” said Jim Peters, tribal natural resources director. The re-vegetated stretch of Skookum Creek runs just behind the tribe’s casino near a major highway. “We certainly could have decided on a smaller buffer, which would have likely meant more development here, but we decided that the health of this stream was more important,” said Peters.

The Squaxin Island Tribe’s cultural connection to the creek was not lost on the project. Before the work began, a staff member from the tribe’s cultural resources department spoke to the planting crews about the tribe’s traditional connection to natural resources and the importance of Skookum Creek to salmon. “This creek runs right through our reservation, past our houses. This is the creek we see everyday,” said Peters. “Skookum may be a small creek, but to us it’s important as any other.”

The tribe is also studying whether to build artificial logjams to supplement the natural growth of the streamside trees. Because Skookum Creek has lacked trees for a century, it has dropped below its original flood plain and straightened. “Fast, straight streams aren’t good habitat for salmon,” said Konovsky. “It will take almost a century for the trees we planted to grow to their full potential. Adding logs to the creek earlier will help recreate some of the natural functions more quickly.”

Last spring’s plantings will be followed up next year with additional plantings along the creek, as well as monitoring by the tribe.

Stillaguamish Tribe:

An old West African proverb holds that “filthy water cannot be washed,” affirming the fact that preventing damage to ecosystems is the only sure way to maintain environmental health.

Through recent water quality efforts, though, the Stillaguamish Tribe is keeping close eye on the health of the region’s water – with a long-term view that will, perhaps, help prevent degradation of the water resource.

“It is in everyone’s best interests to have high quality, safe water,” said Shawn Yanity, fisheries manager and vice chair of the Stillaguamish Tribe. “A good, healthy water source is essential to fish management as well as public health.”



The Stillaguamish Tribe monitors water clarity near Port Susan as part of its overall water quality program.

Photo: J. Shaw

For the better part of two decades, clam harvests at Port Susan have been impossible due to severely polluted water. Through an intensive monitoring program the tribe hopes to bolster cooperative cleanup efforts that have paid dividends for the entire community. Coordinated Tribal Water Quality dollars are making this effort more effective.

With an eye to making area shellfish again safe for human consumption, the tribe is monitoring sites from Kayak Point to the mouth of the Stillaguamish River for degraded water, fecal coliform bacteria and other ecosystem health indicators. The initiative will help assess the status of local waterways – and perhaps lead to the opening of previously closed shellfish beds.

Coordinated Tribal Water Quality funds enabled the tribe to add five more monitoring sites in Port Susan; to do important Geographical Information Systems work which will help track improvements in water quality; and to step up sampling of fecal coliform, a crucial piece of the water quality puzzle.

The tribe has worked for years to improve conditions in the Port Susan area. From the mid-1980s until today, high levels of bacteria have forced the state Department of Health to close Port Susan’s potentially bountiful shellfish beds. Dairy farms, hobby farms, failing septic systems, municipal sewage treatment plants and other factors swelled fecal coliform levels in the water – which made the region’s softshell clam species unfit for harvest.

“These could be very productive shellfish areas,” said Don Klopfer, the Stillaguamish Tribe’s water quality biologist. “But the resources were so degraded, utilizing those clam beds was impossible.”

A cooperative effort over the past several years has diminished pollution sources in Port Susan, and cleanup projects have improved water quality – but to what extent is unclear. The tribe’s studies aim to answer questions about how quickly the water is rebounding.

The state health department ended its monitoring program years ago. By surveying land and water sites in Snohomish and Island Counties, Stillaguamish fisheries staff hope to document the positive effects of pollution-control efforts – and identify the best way to approach those efforts in the future. One possible impact of the studies might be certification of productive shellfish beds for tribal and recreational harvest, perhaps as early as next June.

“We’ve designed our study so that we’re monitoring near shellfish beds, and near potential sources of pollution,” Klopfer said. “This will help us determine which areas are safe for harvest while also pinpointing areas where fecal coliform gets into the water system.”

The tribe has a strong cultural connection to the region and its resources. If certain areas are opened to shellfish harvest, Stillaguamish tribal members will be able to utilize Port Susan’s clam populations for ceremonial and subsistence purposes.

Additionally, the tribal team gathers data on water clarity, salinity, temperature and other important elements of freshwater and marine ecology. Learning more about the watershed can only help habitat preservation and recovery efforts.

“Local landowners and community members have shown their support; some have even volunteered to collect water samples for us,” said Yanity. “We believe they recognize that healthy rivers and clean water are important to everyone.”

Statewide Program Accomplishments

As part of a statewide water quality management model, the tribes and Washington Department of Ecology (DOE) and the federal Environmental Protection Agency (EPA) are working to communicate issues and solutions to improve the development and implementation of statewide water quality standards.

Work has also been accomplished to create an intergovernmental approach to coordinate monitoring efforts in safeguarding the water quality throughout the state. Through this technical assistance project, DOE is planning to share resources and expertise with tribal governments to more effectively protect the ecological integrity of our aquatic systems.

Additionally, the Coordinated Tribal Water Quality Program is beginning to implement a Coordinated Tribal Water Quality Database to more efficiently organize, utilize and share data.

A Model EPA/Tribal Partnership

As the EPA has begun to address its responsibility to tribal lands and resources, the CTWQP is demonstrating how the tribes and EPA can work together. The program also is fulfilling EPA goals for working with Indian governments and lands. Those goals include:

- Development of tribal management capacity;
- Delegation of environmental protection programs to tribes; and
- Encouragement of cooperation between tribal, state and local governments to resolve environmental problems of mutual concern.

The Coordinated Tribal Water Quality Program is producing tribal water quality protection tools with nation-wide applicability. To date, four distinct tools have been developed:

- A program design structure that works to coordinate the activities of 27 individual tribal government programs while supporting both their autonomy and sovereignty;
- The Tribal Water Quality Standards Template, a document created to assist tribes and tribal staff who have selected to incorporate the development of water quality standards into their water quality protection programs;
- The 303(d) Cooperative Implementation Plan. This plan outlines an inter-governmental working relationship between DOE and individual tribal governments in completing the 303(d) listing process both on and off-reservation throughout the state's watersheds; and
- A Coordinated Tribal Water Quality Database design.

In FY 04 tribes participating in the CTWQP will begin work to share the model and take these and other tools to tribes throughout the region.

Future Funding Needs

The continued success and future existence of the Coordinated Tribal Water Quality Program lies solely in the future of its funding. Tribes have demonstrated a commitment to participating in this coordinated forum, and lengthy descriptions of successes and benefits to this approach from tribal, federal and state perspectives have been developed and shared. The funding history of this program is complex in that it predates existing EPA tribal funding mechanisms and has transitioned repeatedly until it was nearly eclipsed by the EPA Indian General Assistance Program (IGAP). Sen. Patty Murray (D.Wash.), recognizing the unique and vital nature of this important water quality initiative, re-identified specific funding to maintain its identity. The challenge for future funding is to rebuild the full scope of the program separate from the mounting and competing needs for limited EPA IGAP monies. The base funding request of \$3.1 million includes \$110,000 for each of the 27 participating tribes and \$200,000 for centralized communication and coordination.

Conclusion

Through the Coordinated Tribal Water Quality Program, the tribes have the same goal for Washington waters as the federal Clean Water Act: to restore and maintain the chemical, physical and biological integrity of the nation's waters.

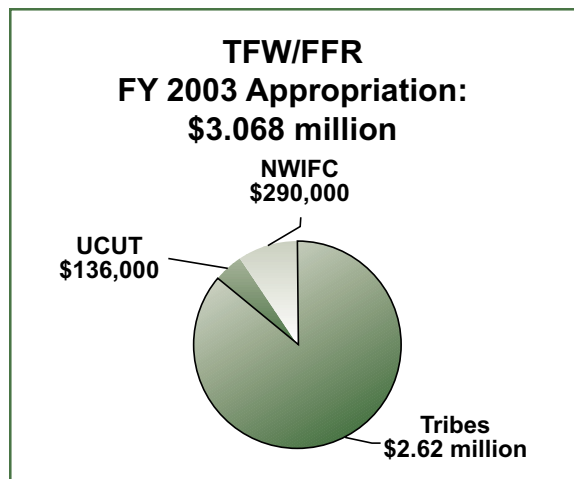
Timber/Fish/Wildlife Forests And Fish Report

Introduction

Tribal participation is a critical component in the implementation of the Timber/Fish/Wildlife (TFW) Agreement/Forests and Fish Report (FFR), and for evaluation of forest management impacts upon treaty-protected resources. The Environmental Protection Agency (EPA), National Oceanic and Atmospheric Association Fisheries Service (NOAA), and the U.S. Fish and Wildlife Service (USFWS) rely heavily on tribal participation and information to ensure and help gauge its success. This is because the tribes offer a centuries-old tradition of resource stewardship, practice state-of-the-art technological innovation, and are strategically located to respond to the critical management needs in their local watersheds. There are three distinct advantages to the tribal process and structure. First, it provides a broad base of local participation that involves each tribal government in the process. Second, it provides tribal and local governments with flexibility to address regional and political differences. Third, this process and structure is efficiently based without a top-heavy bureaucratic response that is costly and slow to react to environmental problems.

Congress appropriated \$3.048 million per year for FY 2000-2002 and \$3.068 million in FY 2003 to fund tribal participation in implementing FFR, in cooperation with federal and state governments, the timber industry and other interest groups. Annually, each of 26 participating federally recognized tribes received \$100,846 to support their goals and participation. Secondly, \$136,000 was designated to accomplish coordination of tribal involvement in eastern

Washington through the Upper Columbia United Tribes (UCUT). To complete the tribal program, \$290,000 was assigned for central policy and technical coordination of tribal FFR implementation statewide through the Northwest Indian Fisheries Commission (NWIFC).



To continue and expand their participation with FFR implementation, tribes need \$4.94 million in FY 2004, an increase of \$1.88 million above current appropriation levels. This appropriation request is intended to maintain existing programmatic infrastructure and activities and to begin building the effectiveness monitoring and data management structures necessary to implement adaptive management and maintain program accountability. Work is ongoing to stabilize this funding by building it into the base funding.

Background

More than a decade ago, treaty tribes and other stakeholders in forest resources within the State of Washington agreed to find common ground for responsible and sustainable natural

resource management instead of waging costly and lengthy battles in the courts to resolve their differences. The result was the unprecedented Timber/Fish/Wildlife (TFW) Agreement. Since then, the tribes and tribal organizations in Washington State have participated in the TFW Agreement, along with the timber industry, state government, and the environmental community.

A variety of factors – including the listings of several western Washington salmon stocks under the Endangered Species Act (ESA), ongoing statewide water quality degradation, and concern over the continued economic viability of the timber industry – brought TFW participants together in November 1996 to develop joint solutions to these problems. Federal and local governments participated with original TFW members in what is commonly referred to as the TFW “Forestry Module Negotiations,” a significant component of Washington’s statewide salmon recovery effort. The result was a plan to update forest practices rules called the Forests and Fish Report (FFR), which was completed in April of 1999, and later adopted by the Washington State Legislature.

The FFR is based on four goals:

- To provide compliance with the ESA for aquatic and riparian-dependent species on non-federal forest lands;
- To restore and maintain riparian habitat on non-federal forest lands to support a harvestable supply of fish;
- To meet the requirements of the federal Clean Water Act for water quality on non-federal forest lands; and
- To maintain the economic viability of the timber industry in the State of Washington.

The six caucuses participating in TFW/FFR implementation are:

- The Federal Government Caucus represented by National Oceanic and Atmospheric Administration Fisheries (NOOAF), U.S. Environmental Protection Agency (EPA), and U.S. Fish and Wildlife Service (USFWS);
- The Tribal Caucus represented by individual tribes and Indian nations in the State of Washington;
- The State Government Caucus represented by the Department of Natural Resources (DNR), Department of Ecology (DOE), Washington Department of Fish and Wildlife (WDFW), and Governor’s office;
- The Local Government Caucus represented by the Washington Association of Counties and individual counties;
- The Conservation Caucus represented by the Washington Environmental Council, American Lands Alliance, Northwest Ecosystem Alliance, Pacific Rivers Council, Washington Forest Law Center, and Washington Trout; and
- The Timber Landowner Caucus represented by the Washington Forest Protection Association, the Washington Farm Forestry Association, and individual timber companies and small landowners.

Tribal Participation In TFW/FFR Implementation

The keystone of TFW/FFR for the tribes is the Adaptive Management Program. Continued implementation of this program is critical to TFW/FFR success. Adaptive management is the process of evaluation and monitoring to constantly gauge the effectiveness of management practices and determine if changes are needed. This ranges from the use of Interdisciplinary (ID) Teams to properly implement the rules in complex site-specific situations, to conducting long-term effectiveness monitoring to establish whether the rules are meeting resource objectives. The tribes were the lead authors of adaptive management rule language that was unani-

mously supported by the other TFW/FFR caucuses. The tribes have also taken the lead on developing two key documents in support of this process including the Adaptive Management Program Manual and the Protocols and Standards Manual for the science arm of the program.

For the tribes, compliance monitoring is intimately linked to the success of the Adaptive Management Program. The effectiveness of compliance monitoring is sought at several levels including supporting the Washington Department of Natural Resources (DNR) in vigorously enforcing the forest practices rules, development of a programmatic and scientifically rigorous compliance monitoring process, and conducting independent compliance monitoring studies in cooperation with individual landowners.

Another factor linked to the success of TFW/FFR is the cooperative decision-making process. This process has been most successful for the tribes as the consensus-based approach acknowledges their management authority regarding forest practices management. Through this approach, the tribes have demonstrated their ability to establish and maintain a cooperative process for the management of forest resources while incorporating tribal concerns. As they have throughout the TFW/FFR process, participating tribes utilize the Northwest Indian Fisheries Commission (NWIFC) for technical expertise and to coordinate a programmatic work plan.

Tribal involvement with FFR implementation has evolved with the availability of federal funds to support those efforts. The tribal TFW/FFR program for evaluation of forest management impacts upon treaty-protected resources is furthering the development of tribal capacity in the areas of silviculture, geology, and hydrology to complement tribal fisheries expertise.

The tribes continue to develop and implement a comprehensive work plan evaluating the forest management guidelines set forth in the FFR for adequacy in meeting tribal salmon recovery goals. They have developed a comprehensive communication network and a coordinated tribal response to improve the application of FFR objectives in watersheds throughout the State of Washington. The tribes are working closely with federal agencies in respect to trust relationships and in providing technical support in response to ESA listings in the forested landscape.

Key Work Plan Elements

The tribal work plan has been developed to promote active participation in the TFW/FFR stakeholder process, to provide scientific and technical support for tribal adaptive management project implementation, and to assist the tribes in addressing their specific issues and concerns.

Key work plan elements include:

Tribal TFW/FFR program development and coordination: NWIFC provides the lead program development and coordination to tribes in the State of Washington. A full-time coordinator, silviculturist, and geomorphologist/hydrologist have been hired as the program's core team leaders to provide the communication and scientific expertise to assist the tribes in implementing TFW/FFR. An email distribution system, video conferencing system, and Web site are used to facilitate dissemination of information and support continued development of the work plan. Program work plan priorities and strategies are continuing to develop that address key near- and long-term issues.

Forest Practices Board (FPB) support: The NWIFC coordinates a policy and technical support network for the tribal representative on the FPB. Participation at this level was especially important during the permanent rule drafting process and continues to provide guidance for adaptive management implementation.

TFW Policy Committee Participation: The TFW Policy Committee is composed primarily of FFR representatives of the various caucuses that negotiated FFR. The tribes continue to build a strong presence on this committee to help direct forest practices policy and actions.

Adaptive Management Program Participation: The TFW/FFR Adaptive Management Program is the heart of the tribal scientific/technical effort and is considered the cornerstone for successful implementation of FFR. The tribes continue to take leadership roles implementing program elements including the development of the FPB Adaptive Management Program Manual. The tribes have successfully proposed and are funding the development and writing of this critical manual within the TFW/FFR process with an expected completion date of December 2004.

Monitoring Design Team (MDT) Participation: The tribes have three participants on the 10-member MDT. The MDT is a “blue-ribbon” panel of scientists that have been charged to help shape the overall Cooperative Monitoring, Evaluation and Research (CMER) monitoring program by developing a comprehensive and integrated design. This design is to serve as a framework for conducting ongoing and future monitoring activities, and to ensure that those activities contribute appropriate and timely information. The tribal participants are taking lead roles including coordination and finalizing the team report. The March 2002 draft of the MDT report is currently being used to help CMER design their 2004 work plan and set the framework for comprehensive multi-year work plan objectives.

Implementation of New Permanent Forest Practices Rules: On May 17, 2001 the Forest Practices Board passed permanent forest practices rules adopting most of the provisions of the FFR. The rules went into effect on July 1, 2001. The tribal program has now redirected its efforts to completing implementation of the guidance and tool requirements of the rules. This includes many unfinished forest practices board manuals, a CMER protocols and standards manual and work plan, the last fish/last habitat water type model and maps, mass wasting screening tools, alternate plan strategies, and road maintenance and abandonment (RMAP) evaluations.

CMER Committee Participation: CMER has initiated and funded over 30 scientific projects to date. The top projects of tribal interest include a study to validate the desired future condition basal area performance targets for western Washington riparian stands, continued development and testing of a GIS-based model that predicts the uppermost extent of fish habitat on streams, a study to validate the basin-area relationship rules for determining the upper extent of perennial non-fish bearing water on streams, multiple studies to validate statewide road and mass wasting rules, and a project to compile and evaluate existing literature and data related to riparian disturbance regimes in eastern Washington. Several of these are now emerging from the science arm of the adaptive management program and results will be discussed soon at the TFW/FFR Policy Committee level.

Field Implementation of Forest Practices Rules: One of the most critical elements of TFW and FFR continues to be the Interdisciplinary (ID) Team process. This process functions to solve problems at the planning stages, which is the stage at which everyone has the most flexibility. Between the various tribes, it is estimated that more than 5,000 individual forest practices applications (FPAs) are reviewed each year. Up to a quarter of these, and perhaps more, will trigger resource concerns that cause tribes to contact landowners for clarification or immediate correction. Many FPAs will require an on-site visit to review and evaluate conditions before approval by DNR. Tribes consider this a basic component of adaptive management at the FPA scale that utilizes DNR's conditioning authority to adjust broad regional or statewide rules to meet FFR resource objectives on complex or unexpected local conditions.

Tribal TFW/FFR Projects



Quileute fisheries technicians measure the width of a creek as part of a stream typing project in the Bogachiel River system. *Photo: D. Preston*

Quileute Tribe:

As part of their TFW/FFR work, the Quileute Tribe worked to complete stream typing for the Bogachiel River watershed, a task that has already been completed for every other major watershed in the Quillayute River system. The stream typing conducted by the tribe meets several objectives. It provides the tribe a rich database on fish use and habitat types, locations of fish passage barriers and a baseline of stream channel and riparian characteristics to monitor for changes over time. This data also is collected to support and improve the Washington Department of Natural Resources' (DNR) regulatory water typing system used to determine which type of riparian harvest is allowed.

The Bogachiel River system drains 287 square miles on the Olympic Peninsula. "It was a huge data gap in our stream typing information. It's important to the FFR agreement to fill these data gaps so we're all working from the same page," said Frank Geyer, TFW biologist for the Quileute Tribe. "Without this information, it's very difficult to identify fish blocking problems or to prioritize those areas that need to be fixed," added Kris Northcut, fisheries biologist for the tribe.

Each segment of stream is different, some wide and shallow, others swift and narrow. Crews measure the width of the stream, as well as the level of the stream during high water. They note pools and riffles, the different types of waters important to salmon and the wetland areas associated with the streams where young salmon like to grow and take refuge in high water. The amount of forest canopy is also recorded because it is important for maintaining the low water temperatures that salmon require.

The tribe submitted the finished surveys to DNR, which will add the information to its database.

Port Gamble S’Klallam Tribe:

With the help of historical records and TFW/FFR funding, the Port Gamble S’Klallam Tribe is peering into the past to try and shape the future of forests along portions of Hood Canal.

Early land survey and timber cruise records – in some cases more than 140 years old – are being used to examine past forest conditions along rivers and streams on the eastern shores of Hood Canal. The tribe then uses this information to catalog changes that have been made to the structure and composition of riparian forests in the area. The project is designed to get a better understanding of how to properly manage a forest and determine what type of restoration work can be done to help improve salmon habitat.

“When we talk about what forests look like today, it’s important that we consider what the forest once looked like and determine how and why it has changed,” said Ted Labbe, habitat biologist with the Port Gamble S’Klallam Tribe, who is in the process of documenting the historical information. “Forests and streams are linked, and understanding how the forest has changed helps determine how we can repair degraded salmon habitat.”

Armed with the historical information, the tribe is seeking to recreate habitat that has been altered or lost over the past century. Past logging removed large fir and cedar, creating disturbance that favored red alder and salmonberry, and reduced riparian forest diversity. Since fir, cedar and other conifers provide many important habitat elements for salmon, the tribe is beginning a project to jump-start natural recovery by reintroducing conifers in riparian alder stands with little or no regeneration.

“The goal is to selectively re-establish patches of conifer, and shift the composition from just alder trees to a mixed forest,” Labbe said. “We don’t want to eliminate alder, because alder is still a very important component of the riparian forest, but we do want to bring back missing habitat components that help stabilize streambeds, create in-stream refuges for fish and sustain a richer more diverse food web.”

Restoring and preserving salmon habitat in the Hood Canal watershed is important to the tribe, which values fish culturally and economically. The watershed supports chinook, coho, pink and chum salmon, along with steelhead and cutthroat trout populations. Of those fish, Hood Canal summer chum and Puget Sound chinook are listed as “threatened” under the federal Endangered Species Act.

“The original surveyors saw the area in a less-disturbed state at a time when salmon were abundant,” Labbe said. “We can take their information and apply it to the restoration work we are doing today. The more we know about how salmon ecosystems functioned in the past, the better chance we will have at restoring habitat for future generations.”



Port Gamble S’Klallam Tribe staff survey the forest near a stream along Hood Canal. *Photo: E. O’Connell*



Jen Sevigny, Stillaguamish Tribe biologist, watches for marbled murrelets during an early morning survey for the threatened birds. *Photo: J. Shaw*

Stillaguamish Tribe: Tulalip Tribes

At precisely 4:37 a.m., the first rays of sun penetrate the gloaming on Wheeler Mountain, overlooking the north fork of the Stillaguamish River. A crew of tribal biologists is already in place, hoping to sight a threatened seabird.

With ears busy filtering out the hundreds of ambient forest sounds and eyes straining for dark birds entering a dark forest, biologists from the Tulalip Tribes and the Stillaguamish Tribe are painstakingly documenting every encounter with the unique and rare marbled murrelet. For the next two hours, they will stare skyward in search of a robin-sized, football-shaped bird that can fly at speeds up to 90 miles per hour.

These surveys, funded through TFW/FFR, are not only crucial to understanding the murrelet, but could have a significant impact on forest practices and salmon recovery in Washington. Washington's murrelet populations are listed as "threatened" under the federal Endangered Species Act, and also as "threatened" under state law in California, Oregon and Washington.

"Once we can prove that these birds occupy a given forest, that forest can be protected," said Jen Sevigny, a biologist with the Stillaguamish Tribe. Along with husband Mike Sevigny, a biologist with the Tulalip Tribes, Jen Sevigny has tracked various bird species in six states. This time, their surveys are a race against the clock to preserve rapidly dwindling second-growth forest habitat. Since the Stillaguamish and Tulalip tribes share much usual and accustomed fishing, hunting and gathering territory, the partnership was ideal.

Because the murrelet relies on two distinct ecosystems for survival, the murrelet is a key indicator species. Any habitat disruption, whether on the coast or in the forest, can have catastrophic effects on the bird.

"The murrelet shows us how interconnected our natural resources are, and how important protecting habitat is to wildlife. For example, if they result in watersheds being protected, these surveys will have direct benefit to salmon and other species as well," said Jen Sevigny. "Some of our best spawning habitat is in Deer Creek or Boulder River, places we are surveying for murrelets."

By design, the surveys coincide with the murrelet's summer breeding season. Female murrelets lay just one egg each year, coming inland to nest from April to September. "This is the only time you're ever going to see these birds in a terrestrial environment," said Mike Sevigny.

At most other times of year, the murrelet remains near the sea and its bounty of forage fish. During breeding season, though, the murrelet will fly from sea to forest, carrying surf smelt and sand lance up to 70 miles to feed its nestling. The doting parents often make several trips a day.

The tribes selected 10 sites to monitor within the Stillaguamish watershed and one site on the Tulalip reservation.

"We have to do on-the-ground surveys to really know where murrelets exist," said Mike Sevigny. "This could save a lot of acreage that represents prime habitat for a magnificent and threatened species."



Greg Morris, Yakama tribal habitat biologist, measures a creek with a laser range finder. *Photo: Yakama Nation*

Yakama Indian Nation:

Like a doctor, Greg Morris collects exact details from his patients so he can find the right cure. But, instead of people, Morris' patients are the streams of the Yakama Indian Nation's traditional fishing areas. A habitat biologist for the nation, Morris conducts stream habitat characterization studies on dozens of streams.

Morris looks deep into stream conditions, collecting data ranging from water temperature to insect populations. "If something like a forest fire or a road closure happens, you can come back and see how those events affect the creek. It's like a yearly check-up for the streams," he said.

The study is helping forest managers see how their actions affect the lands they work in. "Timber managers can come back and see how their actions have helped or hurt," said Morris. "Without information being collected regularly, we have no basis to judge the success of forest practices."

Morris divides each creek into habitat cross-sections that are representative of their entire length. "By just taking a close look at a relatively small stretch, we are able to apply that data out over the entire stream," said Morris.

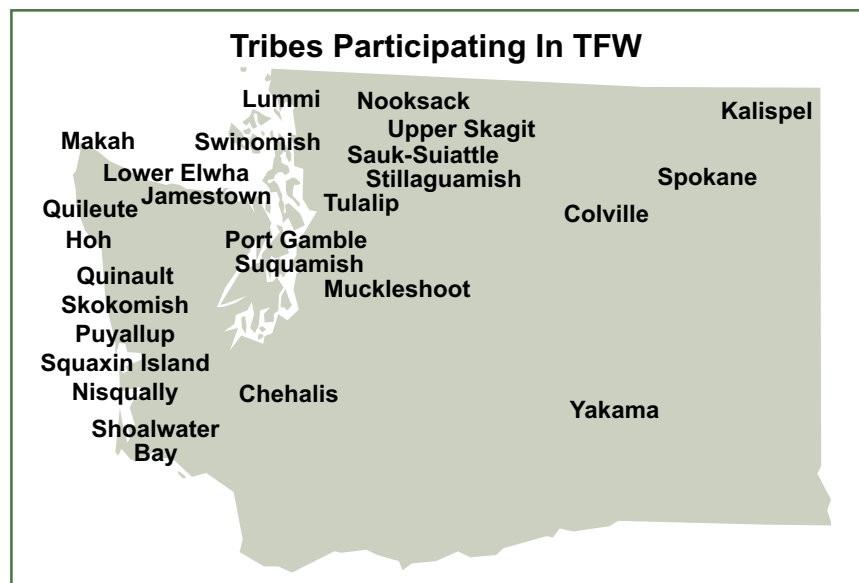
While focusing mostly on managed forestland, Morris is also studying some wilderness areas to determine how they differ from more altered commercial forests. "I try to look at both types of areas and make connections between forests that are and are not managed," said Morris.

"The more information we have about how streams and forests interact, the better decisions we can make about how we manage forests," said Morris.

Tribes and Tribal Organizations Participating In TFW/FFR

Participating individual tribes include: Chehalis Tribe, Colville Confederated Tribes, Hoh Tribe, Jamestown S'Klallam Tribe, Kalispel Tribe, Lower Elwha Klallam Tribe, Lummi Nation, Makah Nation, Muckleshoot Tribe, Nisqually Tribe, Nooksack Tribe, Port Gamble S'Klallam Tribe, Puyallup Tribe, Quileute Tribe, Quinault Indian Nation, Sauk-Suiattle Tribe, Shoalwater Bay

Tribe, Skokomish Tribe, Spokane Tribe, Squaxin Island Tribe, Stillaguamish Tribe, Suquamish Tribe, Swinomish Tribe, Tulalip Tribes, Upper Skagit Tribe, and the Yakama Indian Nation. Participating tribal organizations include: Skagit System Cooperative, Upper Columbia United Tribes, and the Northwest Indian Fisheries Commission.





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